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Railroad accident investigation report

Report No. 80-4

National Railroad Passenger Corporation
Seaboard Coast Line Railroad Company
Lane, South Carolina

May 10, 1978

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
Office of Safety

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FEDERAL RAILROAD ADMINISTRATION

OFFICE OF SAFETY

RAILROAD ACCIDENT INVESTIGATION

ACCIDENT REPORT NO. 80-4

NATIONAL RAILROAD PASSENGER CORPORATION

SEABOARD COAST LINE RAILROAD

LANE, SOUTH CAROLINA

MAY 10, 1978

Synopsis

On May 10, 1978, at approximately 10:20 a.m., a National Railroad Passenger Corporation (Amtrak) passenger train operated by the Seaboard Coast Line Railroad (SCL) collided with a tractor-trailer at a rail/highway grade crossing 1.2 miles north of Lane, South Carolina. At the time of the accident, the weather was clear.

Cause

The accident was caused by the failure of the tractor-trailer operator to stop at the grade crossing and yield the right-of-way to the approaching train.

Casualties

The engineer of the passenger train was fatally injured in the collision. The fireman, the flagman, an Amtrak car attendant and the tractor-trailer operator were seriously injured. The conductor, a second Amtrak car attendant and 16 passengers sustained minor injuries.

Location and Method of Operation

The accident occurred on that part of the SCL extending northward from Savannah, Georgia to Florence, South Carolina, a distance of about 198.2 miles. Trains operate over the single track main line by signal indications of a traffic control system.

The collision occurred on the main track, 47.5 miles south of Florence and 1.2 miles north of Lane, South Carolina. At this point, the main track is crossed at grade by South Carolina State Road S-45-385.

From the south, the track is tangent and practically level in excess of a mile to the point of collision. A siding is located on the west side and parallel to the main track.

South Carolina State Road S-45-385, Crossing and Environment

This road is a two-lane highway paved with bituminous material to a width of 21 feet. The road is tangent and level for over 1,463 feet in an approach to the main track from the west. In the southwest quadrant, the crossing angle between the track and the road is 47°39'.

The grade crossing is 44 feet wide with timber laid along both sides of each rail. The remaining area is surfaced with bituminous material.

For eastbound highway traffic, there is a series of advance warning signs to the grade crossing. A circular railroad crossing sign adjacent to the south side of the road is located 867 feet from the crossing. A pavement advance warning sign is located 364 feet west of the crossing. Approaching the immediate crossing area, a standard railroad crossbuck sign and a stop sign are located 14 feet and 7 feet west of the crossing, respectively.

State Road S-45-385 was opened to traffic in 1970, with an average daily traffic count of 500 vehicles (1977 data). The road connects South Carolina Highway 377 to two other State roads in the western limits of Lane. Since 1970, one previous accident occurred at this crossing but with no injuries or fatalities.

An average of 17 trains pass over this highway grade crossing per day including six passenger trains.

Sight Distance

As an eastbound vehicle on State Road S-45-385 approaches the main track from the west, the angle of intersection of the railroad and highway is 47° 39' in the southwest quadrant. Foliage in this quadrant reduces the sight distance for both an eastbound truck driver and the train crew of a northbound train. Clear sight vision is possible after an eastbound vehicle is within 163 feet of the crossing, or a northbound train is within 236 feet of the crossing.

Maximum Authorized Speed

In the accident area, the maximum authorized speed for passenger trains is 79 m.p.h. For tractor-trailer motor vehicles, the maximum authorized speed is 35 m.p.h.

South Carolina Motor Vehicle Law

Section 46 of Subdivision III, Article 1, Chapter 7 of The Uniform Act Regulating Traffic on the Highways, states:

> §-46-267. Stop. "Stop," when required, means complete cessation from movement.
>
> §46-304. Obedience to traffic control devices required. The driver of any vehicle shall obey the instructions of any official traffic-control device applicable thereto placed in accordance with the provisions of this chapter. . . .

Circumstances Prior to the Accident

Amtrak No. 90

Amtrak No. 90, a regularly scheduled northbound passenger train is owned by Amtrak and operated by the Seaboard Coast Line Railroad. The train consisted of a single diesel-electric locomotive unit, a baggage car, two passenger coaches and a diner car. The passenger coaches were all of steel and steel underframe construction. The train departed Savannah, Georgia, destined for Florence, South Carolina, at about 8:00 a.m., on the day of the accident. At approximately 10:20 a.m., the train passed Lane, South Carolina, and approached the point where State Road S-45-385 crosses the main track.

Approaching the crossing, the locomotive engineer was seated at the controls on the right side of the cab in the front of the locomotive. The fireman was standing near the control panel in the center of the locomotive cab.

Each of the train crew members had received the statutory off-duty period. The crew had been on duty for almost two hours and fifty minutes at the time of the accident.

Tractor-Trailer

The tractor-trailer, a 1973 Ford Tractor-Trailer Combination, was loaded with 55 utility poles each 35 feet long. This vehicle was owned by the Florence Leasing Company of Florence, South Carolina, and operated by Koppers, Incorporation, a wood treatment company. The driver customarily operated the vehicle between Koppers' Wood Yard in Lane, South Carolina, and Koppers' Wood Treatment Plant in Florence, a distance of about 49 miles. He usually made several daily trips between the two plants. Occasionally, the driver would have the vehicle loaded late in the afternoon, drive the loaded vehicle home and depart for Florence the next day.

On the day of the accident, the driver departed his home at 6:00 a.m. for Florence, South Carolina, transporting a load from the previous day. The trip to Florence and the return trip to Lane were completed without incident. Prior to the collision, the tractor-trailer was reloaded at Koppers' Wood Yard to depart for the second trip to Florence. Koppers' Wood Yard is located about two miles west of the rail/highway grade crossing. A local resident stated that the driver waved to her as he drove east on State Road S-45-385. She also stated that she did not watch the vehicle as it continued toward the crossing but she did hear the train's horn and the noise from the collision.

The Accident

Amtrak No. 90

The Amtrak passenger train approached the crossing at 79 m.p.h., as indicated by the speed recording tape of the locomotive. According to witnesses, when the train neared the crossing, the locomotive horn began to sound, and continued to sound throughout the movement. The fireman, standing in the center of the locomotive cab, saw the tractor-trailer as it

approached the crossing from the left. Realizing that the truck was not going to stop, he shouted to the engineer to apply the train brakes in emergency. The fireman fell to the cab floor just prior to the collision. The fireman does not know whether the engineer responded in time to initiate an emergency brake application.

A passenger, seated in the third car behind the locomotive saw the tractor-trailer traveling east toward the crossing at an estimated speed of 15 m.p.h. He estimated that the front of the tractor was 30 feet west of the track when he first noticed it. The front of the locomotive struck the tractor-trailer near the right rear wheel of the trailer tandem.

The locomotive uncoupled and veered to the right, leaving the track in a clockwise movement. As it continued northward perpendicular to the track, the locomotive overturned several times before coming to rest about 454 feet north of the grade crossing.

The four passenger cars derailed and overturned to the right side. The first car, a baggage car, came to rest about 540 feet north of the grade crossing in a diagonal position across the main track, with the north end fouling the siding track.

Damages

Amtrak No. 90

As a result of the collision, the entire train was derailed. The locomotive, a Model F40PH manufactured by the Electro-Motive Division of the General Motors Corporation, was totally destroyed. Two passenger coaches, the baggage car and the diner car remained structurally intact. However, these four cars sustained extensive side and undercarriage damages.

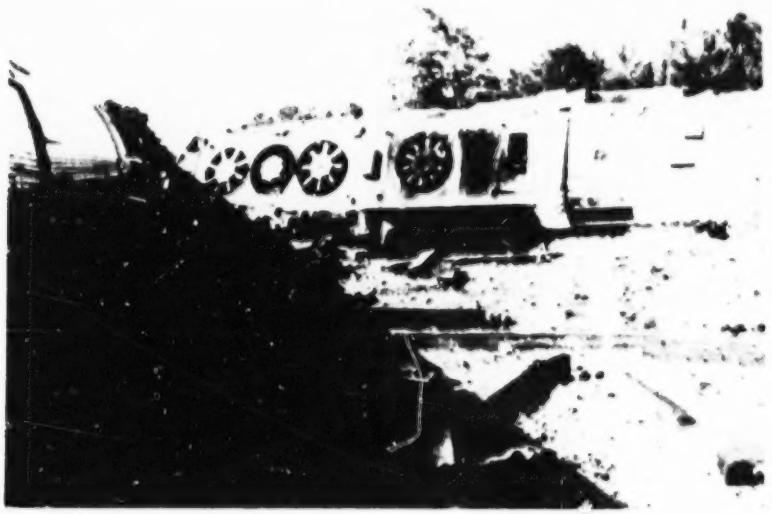
The total cost of rail, track and equipment damage was $965,370.

Tractor

The tractor and trailer load of utility poles was destroyed. The fifth wheel was torn away from the tractor, separating the combination. The cab of the tractor was completely separated from the frame. The tractor frame came to rest 144 feet north of the crossing, along the east side of the track. The cab was later found 38 feet beyond the tractor frame. The forward section of the trailer was separated from the rear tandem section, which came to rest between the two tracks 296 feet north of the crossing. The load of utility poles was strewn along the west side of the track also north of the crossing.

View of the grade crossing from an approaching locomotive. Truck in photograph is similar to the one involved in the collision.

Diesel fuel from the overturned locomotive was ignited and caused a ground fire. A carrier employee and a train passenger used fire extinguishers from the train to put out the fire.



Locomotive No. 274, 454 feet north of impact. Note evidence of ground fire.

Post-Accident Investigation

The tractor-trailer was a 1973 Ford, series LT900, tandem-axle tractor, and a 1977 Evans tandem-axle trailer. The tractor was equipped with a six-cylinder diesel engine and a Fuller RT910 10-speed transmission. The vehicle was equipped with 1000 x 20 tires and a standard air brake system.

The 27-year old driver resided near Andrews, South Carolina. He held a valid, nonrestricted Class 3 South Carolina driver's license. The driver was familiar with both the vehicle and the route. He had been driving for Koppers Incorporation located at Lane, South Carolina since November 1976. He had driven the same tractor-trailer for about one year. In the conduct of his duties, he drove across the same grade crossing each day or another crossing located within a mile of the accident location.

During 1977, the driver received four traffic violations while driving the same vehicle for his employer. At the time of the accident, he had accumulated a total of seven points against his driver's license. (Twelve points requires suspension under South Carolina's law)

Under the circumstances, neither the engineer nor the fireman could have taken any action which could have prevented this accident.

Findings

1. The train approached the grade crossing in accordance with applicable rules of the carrier.

2. The tractor-trailer operator was familiar with his route, and aware of the grade crossings in the immediate vicinity of the Wood Yard.

3. Within a distance of 163 feet, the train was visible to the tractor-trailer operator as the vehicle approached the crossing.

4. It cannot be determined why the tractor-trailer operator did not stop before proceeding through the crossing. Apparently, the driver was not aware of the approaching train until the collision occurred.

5. The collision was caused by the failure of the tractor-trailer operator to stop at the grade crossing and yield the right-of-way to the approaching train.

Dated at Washington, D. C., this
7th Day of April 1980
by the Federal Railroad Administration

J. W. Walsh
Chairman
Railroad Safety Board